Competing Preferences: analyzing the factors that compete with motherhood

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INTRODUCTION

The number of children a women will have during her lifetime is shaped by societal influences such as her cultural and ethnic background, her place of residency and her socio-economic status because they shape not only what is on her mind about ideal family size, but also her opportunities of achieving those goals. But in the path to motherhood, some unanticipated conjunctures, such as not having found a suitable partner or a having a life goal such as attending tertiary school might turn a women who dreamed about having two children into a childless one. On the opposite hand, other conjunctures such as an unwanted pregnancy might cause a woman to bear a child despite of her plan[1]. As a result, some women end up with fewer than desired while others end up with more children than were planned.

Based on the assumption that the desire for children is universal, for the women who have married, childlessness has been attributed to involuntary infecundity. Nowadays, given that it has become more common, married women without children are sometimes labeled as "post-modern", "living the Second Demographic Transition (SDT)"[2] when in fact, these women might have fertility ideals that are higher, but due to circumstances of life that compete with motherhood, they are unable to realize it.

Although high educational attainment is the most influential factor predicting childlessness and low fertility among women in LA and the highly educated are the ones driving the recent changes regarding postponement and foregoing of motherhood, the inability to have the children

1 Unwanted pregnancies accounted for 30% of births in Brazil in 2006. Curtis (2012) suggests that fertility intentions vary throughout the life time and respond to circumstances. Although 45% of births in Brazil were unwanted or mistimed, 80% of women were using contraception, a pattern which is consistent with an ambivalence about using contraception and waiting another child.

2 Having a child disturbs autonomy and the framework of the SDT understand postponement of childbearing and smaller family size as part of an ideational change in which emphasis is given to individual self-realization and autonomy, recognition, expressive work, educational values, the rejection of institutional control, the rise of values associated with the satisfaction of individuals' 'higher-order needs', and gender equality (Surkyn and Lesthaeghe 2004; Van de Kaa 2001 in Billari, Liefbroer, Philipov, 2006; Lesthaeghe, 2014).

one planned is not consistent with the SDT. It is possible that many women with zero or with small number of children are facing situations that constrain or compete with their motherhood plans whether they are married or not. Having fewer children, or not having at all, does not automatically allow the inclusion of these women in a "post-materialistic" category in terms of values and preferences[3]. Thus, it is important to understand what the desired fertility of women who did not have children or have fewer than desired are and unveil what the possible factors competing with motherhood are and what makes a women revise her fertility intentions or report an unmet family size.

In 2001, Bongaarts[4] described a theoretical model that aimed at explaining fertility rates at the aggregate level (TFR) as a result of the multiplication of six parameters by the Desired Family Size (DFS). The first group of parameters is composed of factors that increase fertility related to desired family size: *unwanted fertility* (F_U), *replacements for child mortality* (F_R), and *sex preference* (F_{SP}). The second group is composed of factors that decrease fertility related to desired family size: *rising age at childbearing* (tempo effect which would be the number of children that a women would have had if they had not waited, or the F_T), *involuntary infertility* (which includes the inability to have a child and also an inability to find a suitable partner, the F_I), and *competing preferences* for child (set to 1 when childbearing is universal, the F_{CP}). Thus, following this author:

$$TFR = DFS * (F_U * F_R * F_{SP}) * (F_T * F_I * F_{CP})$$

Notice that if woman realizes her fertility intention, TFR=DFS.

With the exception of the last parameter, all others have been proved to be well measured and reliable[5]. The Competing Preferences parameter (F_{CP}), however, was calculated indirectly in the Bongaarts' Framework, by first estimating all the parameters in the equation, then getting the

3 It is not part of the second demographic transition to wish kids and not have them (Lesthaeghe, 2014). The SDT is a complex framework but it does not postulate that women wish a replacement family size (around 2 children) but cannot accomplish them due to life conjunctures. It is part of the STD to wish and achieve smaller families or even zero but they do so voluntarily, not because of constrains.

4 Bongaarts, J. (2001). Fertility and reproductive preferences in post-transitional societies. Population and Development Review, 27(Suppl), 260–281

5 Dharmalingam, A. Rajan, S. Morgan, S.P. (2014). The Determinants of Low Fertility in India. Demography. August 2014, Volume 51, Issue 4, pp 1451-1475

residual from what could not be explained of the TFR6 by the equation above assuming that all factors have been measured correctly. In previous papers, I have estimated the values of F_{CP} to range between 0.34 and 1[7], and I found that they vary by social groups consistently with what the literature has pointed as having more barriers to fertility, for example, high education level or living in more urban areas.

But such important factor, which has been the cause of much research debate and which is the direct cause of a women missing her fertility intention, deserves to be better explored because it is responsible for substantially lowering the TFR, net of the influence of Desired Family Size. Nevertheless, it is important to understand motivations surrounding fertility outcomes because the multiple profiles that exists within social groups in Brazil reflect the dynamics and complexities of growing old as a woman. So I will make use of different methods of analysis to shed light on factors that compete with fertility using three consecutive Demographic and Health Survey data from Brazil (DHS 1986 and 1996) and the Pesquisa Nacional de Demografia e Saude (2006). I analyze the impact of career attainment, extended education and lack of partnership[8] on fertility, ideal family size, and fertility postponement and forego. I also analyze socio-demographic groups who were more likely to have a deficit in fertility (fewer children than they believe is ideal) and who are more likely to revise their goals at the mid-end of their reproductive life.

What competes with motherhood?

Literature shows that prolonged education, career and work, and extended singlehood can compete with motherhood, although the desire for personal goal achievements co-exist with a desire for children. The reasons are many, but basically, because the pursuit of life goals put into practice by women with preferences other than motherhood consequently increase one's mean age

6 In the case study of Dharmalingan et al (2014), childbearing was nearly universal, so the Competing Preference parameter was set to 1. The authors suggested, however, that new reliable ways to measure Competing Preference had to become available to be used in countries where motherhood has competition.

7 A F_{CP} of 1 means that no competing preference can be detected as a residual. Estimation errors on the part of the other factors caused F_{CP} to be higher than 1 in few cases.

8 According to the parameters, "lack of partner" would be better suited inside "Involuntary Infertility" instead of "Competing Preference". But because it needs to be accounted for and because it is not being accounted in the Infertility parameter, I decided to include "lack of partner" as a competing preference factor.

at childbearing and delaying childbearing may reduce the quantum. More importantly, those competing factors also may cause women to revise their goals, translating into a fertility foregone. On top of that, those women usually have smaller desired family sizes to start with. In the paragraphs below, I will discuss this variables further.

Education

A vast literature has explored the explanations and mechanisms for why education is important for fertility (Brand and Davis, 2011). Kreider (2009) finds that countries facing declining fertility have increasing trends in women's educational attainment (Kreider, 2009). In the work of Rosero-Bixby, Castro-Martín, and Martín-Garcia (2009), the higher odds of being childless are found among those with college degree and working women (for more recent cohorts). Differently, Cohen, Kravdal and Keilman (2011) tested for reverse causality and find that having a child at an early age caused very detrimental effects on a women's education attainment.

Three main explanations associating education with fertility stand out. First, as a source of social norms, education provides women with ideal family sizes. Second, it increases the resources women have to stick to their plan and implement their preference. And three, it provides women with life course roadmaps that make education compete with childbearing, thus society reserves the place for education prior to marriage. More details are found in the paragraphs below.

First, education attainment models ideal family size because it provide literacy skills, information and cognitive changes that broaden a women's knowledge about her own body and reproductive potential reducing her fatalistic approach to life and increasing her trust in science and technology. Information gained at school or throughout mass media also changes attitudes by exposing women to nontraditional life styles and making her questions traditional beliefs and values held by their family of origin, their religious affiliation, and other social structure (Martin and Juarez, 1995; Heaton, Forste, Otterstrom, 2002).

Secondly, education foster a women's achievement of her ideals by leading to higher socioeconomic advantage which increases her access to contraceptive means and reduces her reliance on the existence of public family planning programs, decreasing her proportion of unwanted births. Around the world, the difference between wanted and unwanted is bigger for women with poor education (Bongaarts 2003). Brazil is not different, and 20 years ago, a gap in

contraceptive use was responsible for different TFR among social groups. Unwanted fertility reach 30% of pregnancies although desired family sized was much more similar among groups denouncing a very low level of preference implementation, especially among the low educated (Ibisomi et al. 2005; Bongaarts 1993; Martin and Juarez, 1995).

Lastly, education competes with motherhood because it increases social and economic mobility, "raising the opportunity costs of children by enhancing women's opportunities to pursue wage-earning activities, which are likely to compete with domestic and childrearing responsibilities" (Martin and Juarez, 1995; Heaton, Forste, Otterstrom, 2002). Put in a life course perspective, education attainment is reserved to the first decades of life. Females who pursue higher levels of education and for which the levels of return of education are higher, are encouraged to postpone marriage and family formation, which affects the quantum and tempo of fertility (Kohler and Ortega, 2011). Although educational improvements in Latin American at the primary and secondary level affected fertility in the past, the differences are now more pronounced among women with or without college education (Rosero-Bixby, Castro-Martín, and Martín-Garcia, 2009).

Work/Career

The influences of career and work for fertility rates are less straight forward than those of education. In fact, Martin and Juarez (1995) found that the impact of education is often reduced when economic controls are applied. That means there is a substantial difference between women according to their income or work status regardless of her education. On top of that, both educated and low educated women tend to work in Brazil and women of low SES have historically worked (Leme e Wajnman, 2000).

Data for Brazil shows that the type of occupation could definitely interfere with her reproductive behavior. Dias Junior (2010) finds that the mean number of children ever born for administrative workers is two children. Manual workers have at least 1 more child if they are urban and domestic workers, or 2 more children in case of rural workers.

In an analysis considering separate effects for each new parity, Souza, Rios-Neto and Queiroz (2011) find that the children, in general, reduce the probability of labor market participation of women, especially children of high parity, such as the third.

Lack of partner

Lack of partner and older age at marriage work on fertility reduction by limiting the opportunities and the amount of time a women have to bear the children she planned.

Data from the 90's reveal that by age 50, still 13% of women in Latin America have not married (Heaton, Forste, Otterstrom, 2002). Because childhood is not tied to marriage in Brazil, this does not mean they do not have any children or they do not want any children. Limited data is available on the percentage of women who arrives in mature life single and without children in Brazil. Bonifacio (2011) suggests the main reasons are involuntary, such as infertility or involuntary celibacy.

Another complicating factor of studying the influences of marriage on childbearing is that among 25 to 29 years old, 50% were in cohabitation in 2010 and this number has been increasing (Esteve et al. 2012; Covre-Sussai et al. 2015). That is why in the case of Brazil, one has to use data on sexual activity rather than marriage to indicate exposure to pregnancy (Stover, 1998). Some unions follow the birth of a child or immediately precedes it. In some cases, the interval between the marriage and the first child is 0.7 years, proving that it has become more common to get marriage pregnant (Alves and Cavenaghi, 2009).

RESEARCH QUESTIONS AND METHODS

What competing factors seem to be more important in defining a women's fertility related to her ideal family size? For which reasons are women having fewer children than they wish over the years? Do I have evidence to suggest that some women are foregoing fertility while others are just hoping to delay? How different are the two groups? I will use the Brazilian Demographic Health Surveys of 1986 and 1996 and the Pesquisa Nacional de Demografia e Saude 2006, the most recent at the time of this research, to answer the two specific objectives of this chapter:

1 - Evaluate the impact of career attainment, extended education and lack of partner on actual and desired fertility.

2 - Understand the characteristics of women who have fewer children than they wish and who have more children than they wish. Understand what explains a women intentions of postponement or foregoing of their fertility.

In the following paragraphs, while introducing the objectives of this chapter, I will also present the methodology I chose to address them and their results. Data cleaning, variable recoding, and data analysis were done using Stata 12. The specific statistical commands and filters utilized will be detailed further individually.

First objective

First, at the individual level, I am interested in evaluating the impact of career attainment, extended education and lack of partner on actual and desired fertility. In order to do that, I Performed Poisson regressions of number of Children Ever Born (CEB) and Desired Family Size (DSF) to clarify which of those covariates are associated with lower values for both fertility measures at the individual level. The categories for those variables of interest are: Marital status (Cohabiting =0, Married =1, Separated or Divorced=2, Single and Never married=3); Years of education continuous), labor market participation (no=0, yes=1), BA level (no=0, yes=1).

Covariates will be used to control for the fact that socio-demographic groups are more likely to have or wish fewer children over time: place of residence (0=urban, rural=1), macro-region (North=1, Northeast=2, Southeast=3, South,=4, Center-West=5), religious affiliation (Catholic=1, Protestant=2, Other=3, No-Religion=4), church attendance (no=1, yes=1), race (White=1, Black=2, Brown=3), and wealth index (5 levels 0 to 4, being 4 the highest)[9].

For CEB, as usual in demographic research, only women age 40 and plus were considered, as they are close to the end of their reproductive life. Age is kept as a control in the DFS regression.

The dependent variable are both count data at the individual level represented by a distribution of non-negative integers that resemble a Poisson distribution. The logarithm of the expected value of both independent variables (DFS and of the CEB) conditioned on the exogenous

9 Refer to the Appendix of Chapter 1 for explanations on the construction of the Wealth Index and the Predicted Level of Education (Tables 6 and 7).

variable is linked to a linear function on their predictor variables, which are the characteristics investigated in this study:

$$\log(E[Y|X]) = \alpha + \beta' X$$

where: α is a parameter, β is a vector of parameters and X is a matrix with the explanatory variables.

The coefficients and p values for the Poisson Regression of the CEB can be found on Table 1, while the Poisson Regression of the DFS can be found on Table 2. The results displayed are showed in Incidence Rate Ratios. It is obtained by exponentiating the Poisson regression coefficient.

Poisson Regression of Children ever Born

After controlling for important covariates such as race, religion, church attendance, urbanicity and geographic region, the coefficients on Table 1 show that the number of children ever born is dependent on one's wealth index, level of education, work status and marital status as predicted by the literature review. Notice how for each additional wealth level, the risks of having a child decreases. In 1986, for example, the RRI of 0.796 means that each additional wealth level decreases the risks of having an extra child by 11% (1-0.89). The proportions are consistent across DHS years.

Having a BA decreases fertility much more in 1986 than 1996 and much more in 1996 than 2006. Notice that having a BA in 1986 decreases the risks of having a child by 39% (RRI is 0.615) and in 2006, by 19% (RRI is 0.810).

Women who work behave the same way, but the relative risks are slightly more consistent over time: 0.873, 0.954 and 0.944.

By far, the most important predictor of fertility is marital status. Being married, cohabiting or being separated/divorced are associated with much higher risks of having additional children than being single, varying from 25.86 times the risks of singles in the case of married in 1986 to 4.56 in the case of cohabitants in 2006. One can also notice that throughout time, marital status has been losing importance, as can be seen in the decline of magnitude in those risks.

---------- Table 1 about here ----------

In sum, consistently, at the multivariate level, women who work, have a Bachelor degree, and have higher socio-economic status (measured using Wealth) have fewer children. Singles also have fewer children than married, cohabitants and separated/divorced and marital status.

Poisson Regression of Desired Family Size

When it comes to desired family sizes, which is not supposed to be contingent on competing preferences, the roles of wealth, work and education are unaltered as can be seen in Table 2, although their effects are very small yet significant.

Notice, for example, that each additional wealth level contributes for a decrease in DFS by 1.5% (in 1996, RRI is 0.986) to 3% (in 2006, RRI is 0.971).

----------Table 2 about here ----------

Women who work follow the same tendency, but the only significant coefficient is in 2006 when working gives women a 4% decreased risk of wishing additional child as can be seen in Table 2.

BA, however, changes from being associated with smaller desired family sizes in 1986 and 1996 (coefficients are smaller than 1 on Table 2), to be related to larger family sizes in 2006 (larger than 1), but this last is not statistically significant. So, this basically means that BA no longer matters for DFS in 2006 probably because of the expansion of the tertiary education, suggesting that the deterrence effect of holding a BA is diminishing.

Since this regression was performed for women of all ages, the coefficients of age also indicates that the older a women, the higher her DFS. In fact, each additional year of age contributes for an increase in 1% of her risks of having more children.

Another important thing to notice on Table 2 is that both married and cohabiting have higher DFS than singles (higher DFS represented as a higher risk), but not separated/divorced. That means that if divorce is not selective of women with smaller family sizes, it could contribute for a decline in DFS. With this database, however, it is difficult to evaluate the causality and selectivity of that.

It is also important to notice from Tables 1 and 2 together that women who cohabited or were separated/divorced desired less children that their married counterparts, but had similar CEBs (*changes in reference category not shown*). These results indicated that being

separated/divorced is not a competing preference for fertility. Altering the reference category it is also possible to see that even controlling for all covariates, all marital status wish fewer children than married women. Again, it is impossible to suggest a causality here implying that women change their minds once they get married because this is a cross sectional database.

In order to see whether having had a child changes the desires, I also included "had a child" in my controls (not shown) and the biggest finding is that having a child increases the desire for bigger family sizes, as expected for a population with higher levels of rationalization.

Second objective

The second objective is twofold. First, I want to understand what the characteristics of women who have fewer children than they wish are compared to women who have more children than they wish (*Multinomial regression of fertility status*). Second, I want to understand who the women who are revising their fertility goals are, trying to understand the association with postponing or foregoing motherhood for women age 30 and plus (*Odds of wishing to stop or continue for women who have fewer children than desired family size*).

Multinomial logit regression of fertility status

Using women's response to their CEB and DFS utilized in the previous question, I built a 3 category variable called Fertility Status. Using the following calculation, I determined which category a women age 30 and plus belong:

1 - If her DFS=CEB, women were categorized as Neutral because they currently have the same number of children as their ideal[10].

2 - If her DFS<CEB, women were categorized as Surplus because they already had more children than she was desired.

3 - If her DFS>CEB, women were categorized as Deficit, because women had fewer children than she considered ideal.

[10] It is impossible to know whether they could be just rationalizing.

Thus, the three category variable of Fertility Status stands as follows (0=neutral, 1=surplus, 2=deficit). I performed a multinomial logit regression of Fertility Status because Multinomial logit are used to model discrete variables with more than two possible outcomes given a set of independent variables. The coefficients for the Multinomial logit regressions, showed in Log Odds and having Surplus (1) as the reference category, can be seen in Table 3.

The independent variables are the same applied in Objective 1 - Marital status (Cohabiting =0, Married =1, Separated or Divorced=2, Single and Never married=3); Years of education continuous), labor market participation (no=0, yes=1), BA level (no=0, yes=1). The controls are also the same.

For this analysis, women who did not have a DFS were classified as neutral and those who were pregnant were dropped.

---------- Table 3 about here ----------

Who are the women who have fewer children than they wished at age 30? Who are the ones who have more children than desired?

As can be seen on Table 3, controlling for all covariates, the women who have higher chances of having a Deficit fertility compared to a Surplus are the women of higher Wealth Level, those who work, those with a bachelor degree and the singles. Notice in Table 3, for example, that the odds of being in the Deficit category (having Surplus as a reference) tend to be more positive the wealthier the women is and in case or has a BA degree. In 2006, women with college education have more 1.410 log odds of being in the deficit group as compared to the surplus. Exponentiating the coefficient would result in 4 times higher chances of being in that group. In the same year, each additional wealth level would increase a women's odds of being in the Deficit group by 23% (Exp 0.215). Because this is a multinomial logit, those variables also present higher chances of being in the neutral category when compared to Surplus, but these coefficients won't be commented.

In 2006, those who work have higher chances of being neutral, but not higher chances of being in the Deficit group. In fact, in both 1986 and 1996, women who work have higher chances of being in the surplus (odds are -0.0187 and -0.0329, respectively), but these numbers are non-significant.

The strength of marital status compared to the other variables seem to be decreasing over time, which suggest that either childbearing has become equal across marital status or that

single-motherhood has become more acceptable and people are no longer getting married after an unwanted pregnancy. Take the odds of married people over time, for example: on Table 3, their log odds vary from -3.682 in 1986, to -2.701 in 1996, and -1.863 in 2006.

Odds of wishing to stop or continue for women who have fewer children than desired family size

As a second step for this Objective 2, I selected only the women for whom their number of children ever born (CEB) is smaller than her desired family size (DFS) for women age 30 and plus. Within this group of women with deficit fertility, I look at what percentage of women answered "no" and "yes" to the following question: "would you like to have an additional child/any child? (*Translations are mine*)". Women who answered "**yes**" are women who are possibly postponing their fertility and they were coded as 0 (zero). Women who answered "**no**" are women who are foregoing fertility; in other words, these women have revised their fertility intentions downwards, possibly due to competing preferences, and they were coded as 1 (one).

DFS>TFR → would you like to have an additional child/any child?

Yes (0), she is postponing.

No (1), she is foregoing.

A logistic regression on selected covariates clarifies the factors associated with answering **no (0)** compared to answering **yes (1).** The coefficients in this case are the log odds that a person with a certain characteristic will have marked the option **no**, or foregoing one's fertility (Hosmer & Lemeshow, 2000). Thus, a positive coefficient means that this social group has higher odds of wishing to stop fertility by not having more children. This is the group making a downward revision of their fertility intentions. A negative coefficient means the social group is more likely to delay fertility (by saying that wish to have children at a later time).

Although competition depletes fertility rates related to ideal family size, postponing fertility might temporarily decrease period fertility rates or even cause a tempo effect that ultimately leads to a quantum effect. The coefficients can be seen in Table 4.

The independent variables are the same applied in Objective 1 - Marital status (Cohabiting =0, Married =1, Separated or Divorced=2, Single and Never married=3); Years of education continuous), labor market participation (no=0, yes=1), BA level (no=0, yes=1). The controls are

also the same. In 1986, women who were not married or cohabiting did not get asked the question about intention for additional births.

For the three years, women who were pregnant, sterilized or infecund at the time of the interview or who said they didn't know their intention for additional births, were dropped from the analysis. The coefficients for the Logit Regression, in log odds, can be found on Table 4.

---------- Table 4 about here ----------

Within the women who have fewer than desired, who are the ones who are postponing their fertility (with an additional child later) and who are the ones who are revising (do not want more children)?

Notice, on Table 4, that positive and significant coefficients are associated with foregoing fertility, while negative and significant are associated with fertility postponement.

Additional wealth levels are associated with increasing odds of revising fertility. That means, when richer people are facing a deficit fertility, they are more likely to say that they do not want more children (revise their fertility downwards), but only in 1986 that coefficient is significant (log odds are 0.342 which translates into a 40% increase in the odds of revising fertility compared to postpone).

In that same year, women who are working or who have Bachelor degrees are more likely to say that their deficit is temporary (or that they are postponing their fertility). This is because their odds of being in the foregoing group is negative (-0.350 for Work in 1986 which translates into being 70% the odds of people who don't work of being in that same category and -0.807 for BA in 1986, which translates into 44% the odds of people without BA in being in that category).

The results are consistent over DHS years, but work is only significant in 1986.

As expected, singles have much higher odds of just being delaying fertility.

In this univariate models, I did not control for the number of children ever had, but they all have fewer than wished. It is possible, though, that the married women are much more likely to stop because they already have some children, while the single might have none. In both cases, they could have fewer than wished.

The results presented in this subsection suggest that wealthier, the more educated individuals, those who work and the singles had a greater propensity to belong to the group with deficit fertility. It also shows that, with the exception of the wealthy, they suggest their fertility is a matter of postponement.

DISCUSSION

The results of this chapter indicates that at age 30, women who are single, work, have a Bachelor degree, and have higher socio-economic status (measured using Wealth) have fewer children than their counterparts: the married, cohabiting or separated/divorced, the women without a bachelor degree, the women who don't work and women of low socio-economic strata. These finding are in accordance with the literature as previously explored (Kreider, 2009; Rosero-Bixby, Castro-Martin, and Martin-Garcia, 2009; Martin and Juarez, 1995; Heaton, Forste, Otterstrom, 2002; Smock and Greenland, 2010; Dias Junior, 2011; Itaborai, 2013; Souza, Rios-Neto and Queiroz, 2011).

At the intention level, these women also wish fewer children, especially younger women. College degree, however, changes from being associated with smaller desired family sizes in 1986 and 1996 and loses its effects in 2006. This could be related to the less selectivity of education over time.

Even though it is no longer significant in 2006, the difference between what highly educated desire and what they end up having represent a negative number, meaning that they have a deficit fertility. This finding suggests that schemas that prioritize college education might not be easy to combine with schemas for marriage.

Deficit fertility is also found for women who work and the higher one's wealth level. Nevertheless, being single is the most important predictor of having fewer than desired at age 30. The signs of the relationships found above are consistent. The only difference found in the associations is for women who work, who move from having surplus children in 1986 and 1996 (more than they wish) to being neutral in 2006. This possible means that women who worked in 1986 and 1996 were already wishing to have fewer even thought they could not completely achieve it (which inflates the proportions of surplus).

Within the group with deficit fertility, when asked if they have the desire for an additional child, both people with Bachelor degree, singles and people who work mention they are willing to do so. So, with the exception of the wealthy (who revise their fertility down saying that they do not wish to have more), low fertility is, at least theoretically, a matter of postponement. It is

impossible to know, however, if these women who are already 30 years old, will be able to catch up on the fertility they are missing.

My analysis also showed that being single is highly associated with having fewer children, but this was more important in the past, where women might have been more likely to get married following an unwanted pregnancy, remaining single only the ones who did not get pregnant. Nowadays, singleness after age 30 have become more alike compared to marriage when it comes to childbearing behavior (odds of CEB are more alike), which is probably caused by a decline in stigma surrounding single motherhood. In terms of intentions, however, singles do not differ much from other marital status (even though they do have smaller intentions).

In sum, these findings are consistent with claims that schemas of low fertility are more present for highly educated, women who work, and of higher wealth, but they co-exist with a desire for motherhood as those are exactly the same groups that present a deficit fertility. However, when it comes to decide whether to revise one's goal, the first two groups (high educated and women who work) do not see the necessity of revising their plans downwards, but they hope they can make accommodations to fulfill first their human capital investments and then their role as mothers. But these women are already 30 and have fewer years ahead of them – with declining chances of conceiving.

Given that postponement is being driven by women with BA and who work, policies such as affordable childcare and paid maternity leave which have been successfully implemented in some European countries could make a difference for the fertility recuperation in Brazil. It is important to learn what is necessary, in terms of public policy and institutional arrangements, to allow them have the children they wish because it might be easier to help a women have the children she is missing than fostering policies to increase incentives for childbearing in women who do not want to have children.

Speaking of which, the higher the wealth, the more odds a women have of revising her fertility down. That mean having the children you previously planned, apparently, is not a matter of money. That is possible, unless the costs associated with having children grows in different magnitude than the wealth of the women. Research for the United States has shown how the costs of raising children gets more expensive the richer the parents are. This happens because wealthy parents might have the desire to spend on their children whatever it takes to stay ahead in "this world of uncertainty" (Cohen, 2015). So, the costs of children escalate. If this is also true for Brazil,

this could explain why wealthy women revise their fertility down: it could be their strategy of maximizing their investments. Future studies should investigate the levels of wellbeing of women and if they are somehow disturbed for having to revise their fertility downwards.

As Alves and Cavenaghi (2009) find that income does not seem to affect fertility for highly educated, but do so for low educated, future work should also look more attentively to interactions, such as this effect of low socio-economic status when interacted with college education, and also interacted with work and marital status.

It is also important to notice that Competing Preference might not be the best way to call a factor that embraces both things that depends on women's will – such as career and college education – and things that might reflect women's lack of choices, such as not having a partner with whom she would like to have children with. Although childbearing happens outside of marriage for many Brazilian women, those are usually of low socio-economic strata and at very early ages. When women are more empowered and are able to make choices that expands their life opportunities, such as the college attainment, both marriage and childbearing are postponed. So, remaining single while marriage is a condition *sine qua non* for childbearing cannot be simply be defined as a choice, but as constraint. The new parameter, if any, should be named Competing Preferences and Constraints. Future studies should explore how different socio-demographically are the groups who have deficit fertility due to the pursuit of life opportunities and those who have it because simply did not find a suitable partner. It would also be interesting to see the differences in wellbeing for both groups.

Back to the results of this chapter, the main limitation of this study is the fact that most of its analysis are constructed based on the report women give, at the time of the interview, of values for their DFS at the moment they did not have any children, sometimes referring to decades ago.

In that case, the competing preference parameter might be biased because what a women may have had reported in the far past might have been higher or lower than what she is reporting at the time of the interview. Unfortunately, DHS are not the state of the art database to evaluate changes in desired fertility because they are cross-section, so they do not capture these changes as they happen. However, in the case of Brazil, this is the most appropriate database for this kind of study that was available at the time of this research and it is extremely rich in regards to fertility information.

In order to further explore this limitation, in Table 8 I reconstruct reports of DFS using three different DHS years, capturing samples of the same "cohort" of women 10 years later. Although they are not the same people given that the DHS is cross-sectional, women who were 40-49 in 2006, were 30-39 in 1996 and 20-29 in 1986 assuming that mortality and international migration are not biasing my results. So, I am capturing a sample of a true population group.

Notice in Table 8 how the values for the DFS according to age varies a lot over time, decreasing with the DHS year and being always smaller for the younger women. For example, in 2006, women age 20-29 have a DFS of 1.9 while women age 30-39 have a DFS of 2.15 and women age 40-49 have a DFS of 2.46. Looking across DHS for the same age group, women age 20-29 in 1986 had a DFS of 2.60 in 1986, 2.09 in 1996 and 1.90 in 2006.

It is impossible to know however, whether these are effects of age, period or cohort.

---------- Table 8 about here ----------

However, the values for the cohorts on Table 8 do not seem to follow a big trend. They all decline in 1996 compared to 1986, and then return to higher values in 2006, when they reach 40-49 year old. Thus, variations may be caused by small sample size differences.

I observed two increasing trends, for Protestants (2.41, 2.43 and 2.50 for 1986, 1996 and 2006 respectively) and region North (2.56 in 1986, 2.62 in 1996 and 2.77 in 2006), and two decreasing tendencies, for Education 2 and 4, which refer to Middle School (2.62 for 198, 2.42 for 1996 and 2.39 for 2006) and High School (2.43 for 1986, 2.30 for 1996 and 2.10 for 2006).

In sum, the overall result indicate that women do revise their DFS, but not very much. So, in the end of the day, I am stuck with a measure of competing preference (F_{CP}) that evaluated the revisions of a women's ideal family size of an ideal family size that might already been revised. It is possible that some of these of women on Table 8 might have revised their DFS because they had children. Others, revised down due to Competing Preference. In the end, they might cancel one another out.

So, in my last analysis of the paper, I will do a humble attempt to investigate whether women's preferences for DFS have altered over time controlling for their parity. Stratifying by selected socio-demographic characteristics, women aged 40-49 in 2006 are the same women aged 30-39 in 1996 and 20-29 in 1986. Using birth calendar data (age of mother at each birth), I also know where in time her children were born. So, for example, I am able to track samples of

cohorts of women who had zero children in 1986 when they were 20-19, but who had one in 1996 when they were 30-39 and then had 2 in 2006, when they were 40-49. I am also able to see their report of DFS at each of these moments and list down the reported DFS for each cohort of women who had each combination of parity at each year: 0, 1, 2 or 3 or more children in 1986, 0, 1, 2 or 3 or more children in 1996, 0, 1, 2 or 3 or more children in 2006. I also calculated measures of dispersion for DFS (mean, standard deviation, coefficient of variation) to understand if controlling for the timing of each parity, women at the aggregate level and as a cohort revised their intention.

On Table 9, the reports of DFS and the measures of dispersion can be seen for each of those combinations as they represent different lines on the Table.

For example, I know that the group of women who had 0 children in 2006 also had 0 in 1996 and had 0 in 1986. Their mean DFS as a group changed from 2.49 when they were 20-29 in 1986 to 1.79 when they were 30-39 in 1996 to 1.80 when they were 40-49 in 2006.

A group of women who started with 1 children in 1986, and moved to having 2 children in 1996 and finished with 3 in 2006, moved from having a mean DFS of 2.32 in 1986 to 2.32 in 1996 to 2.82 in 2006 as a group.

It is important to notice that given that the ones with zero are a larger pool of women, one cannot say that the DFS declined and then increased, but it certainly increased after women had the first children.

The DFS and the measures of dispersion on Table 9 consistently increases for every group at every 10 years. For instance, for women who had 0 children in all years, the coefficient of variation moves from 0.52 in 1986 to 0.63 in 1996 and 0.95 in 2006. The higher the coefficient of variation, the more diversity within sample.

The fact that the DFS changes and gets more diverse either means that women adapted their DFS to their current composition or that women who were selected of low fertility continued with zero as the other ones moved forward. It is interesting to see, however, that even when a women has zero children at age 40-49, she still mentions close to 2 (1.80) as a DFS.

Table 9 also shows that the major qualitative change is between the first two DHS (1986 and 1996), with not a lot of movement happening after women turned 40.

In sum, women's reports has become more diverse as they follow different life paths with the first child birth being a great turning point in defining their mom's DFC.

This finding results suggest that the DFS, by the time are reported by women in the interview, have already been revised. However, it does not invalidate the Bongaarts parameters, but emphasizes that the competing preference parameter is estimated with limitations and can only be estimated properly when new measures of DFS make themselves available, and after all other factors are measured perfectly.

Back to the results of this chapter, as Brazil is already 10 years older than its last DHS, it will be interesting to see if these patterns of Competing Pference continued and even gained more momentum as public policies that fostered education achievement and college enrollment among Blacks and people with low socio-economic status were implemented in the last decade.

Last but not least, although competing preferences depletes fertility related to DFS, no other parameter in the Bongaarts equation (2001) exist to represent revisions upwards. For example, it is possible that re-marriage, love, peer pressure or even new social trends can cause a women to revise her goals upward.

Future studies should investigate other turning points in a women's life course. How frequent and in what circumstances women re-assess their fertility goals? In what measure and for which women an important job offer make women revise their goals? Likewise, for what women and how promising a loving partner would need to be in order for a 30 year old single woman revise their goals upwards or anticipate their fertility? How far do women go in order to accomplish their dreams? Are the gains of motherhood compensating the losses in terms of professional achievements and personal life? In other words, what is the limit of one's adherence to their own identity and how does it change to accommodate conflicting schemas? As Brazil heads to lowest low, will one see the participation of Competing Preferences and Constraints increase? What will be the new competing preferences and constrains in the near future?

References

ADSERA, A.; MENENDEZ, A. Fertility Changes in Latin America in Periods of Economic Uncertainty. Population Studies 65 (1): 37–56, 2011.

Adetunji, Jacob A. (1998). "Unintended childbearing in developing countries: levels, trends, and determinants." DHS Analytical Reports No. 8. Calverton, MD: Macro International.

Alves, José E. D. and Suzana Cavenaghi. 2009. "Timing of Childbearing in Below Replacement Fertility Regimes: How and Why Brazil is Different." *XXVI IUSSP International Population Conference*

Billari, Francesco C., Liefbroer, Aart C., Philipov, Dimiter. The Postponement of Childbearing in Europe: Driving Forces and Implications. Vienna Yearbook of Population Research Special issue on "Postponement of Childbearing in Europe". 2006 Page 1-17.

Blossfeld, H.-P., & Huinink, J.. (1991). Human Capital Investments or Norms of Role Transition? How Women's Schooling and Career Affect the Process of Family Formation. *American Journal of Sociology*,*97*(1), 143–168. Retrieved from http://www.jstor.org/stable/2781641

Bongaarts (1997). "Trends in unwanted childbearing in the developing world." Studies in Family Planning 28(4): 267-277.

Bongaarts, J. (2001). Fertility and reproductive preferences in post-transitional societies. Population and Development Review, 27(Suppl), 260–281

BONGAARTS, J. Completing the fertility transition in the developing world: The role of educational differences and fertility preferences. Population Studies: A Journal of Demography Volume 57, Issue 3, 2003

BONIFÁCIO, G. M. O. ***Progressão da parturição e intervalo entre nascimentos num contexto de declínio da fecundidade***: uma aplicação a países da América Latina. Dissertação (Mestrado) - Universidade Federal de Minas Gerais, Belo Horizonte, 2011.

Brand JE[1], Davis D.(2011)The impact of college education on fertility: evidence for heterogeneous effects. Demography. 2011 Aug;48(3):863-87. doi: 10.1007/s13524-011-0034-3.

Castro Martin, T. (2002). Consensual unions in Latin America: Persistence of a dual nuptiality system. Journal of Comparative Family Studies 33(1): 35–55

Chackiel, J. and S. Schkolnik (2004). "América Latina: los sectores rezagados en la transición de la fecundidad". In: Naciones Unidas. 2004. "La fecundidad en América Latina: ¿Transición o revolución?" Serie Seminarios y Conferencias: (36): 496p. Santiago de Chile, 9-11 July, 2003. pp: 51-74.

Chackiel, Juan (2004). "La transición de la fecundidad en América Latina 1950-2000." Papeles de Población 41: 9-58.

Cohen, J. Ø. Kravdal, N Keilman. 2011. Childbearing impeded education more than education impeded childbearing in a cohort of Norwegian women. Proceedings of the National Academy of Science 108(29):11830-5

Cohen, Philip N. 2015. The family: diversity, inequality, and social change. University of Maryland. First edition.

Covre-Sussai, Maira; Bart Meuleman, Sarah Botterman, Koen Matthijs, Traditional and modern cohabitation in Latin America,*Demographic Research*, 2015, 32, 873

Curtis, S. L. (2012). Contraceptive use dynamics research needs post fertility transition. *Brazilian Journal of Population Studies*, *29*, 191–193. Retrieved from http://dx.doi.org/10.1590/S0102-30982012000100012

Dharmalingam, A. Rajan, S. Morgan, S.P. (2014). The Determinants of Low Fertility in India. Demography. August 2014, Volume 51, Issue 4, pp 1451-1475

DIAS JÚNIOR, C. S.. Diferenciais no comportamento reprodutivo das mulheres Brasileiras: uma análise a partir dos grupos ocupacionais. Dados (Rio de Janeiro. Impresso) JCR, v. 53, p. 233-266, 2010.

Esteve, A., Lesthaeghe, R. and López-Gay, A. (2012), The Latin American Cohabitation Boom, 1970–2007. Population and Development Review, 38: 55–81. doi: 10.1111/j.1728-4457.2012.00472.x

FRY, RICHARD (2013). A Rising Share of Young Adults Live in Their Parents' Home. Social and Demographic Trends. Pew Research Center (report)..

Gerson, Kathleen. (2011). The Unfinished Revolution: Coming of Age in a New Era of Gender, Work, and Family. Oxford University Press.

Goldani, Ana Maria. "What will happen to brazilian fertility?." *Completing the Fertility Transition* (2001).

Gupta, Neeru and Iuri C. Leite. 1999. Adolescent Fertility Behavior: Trends And Determinants in Northeastern Brazil. International Family Planning Perspectives, 25(3), 125-130.

Hakkert, Ralph (2001). "Levels and determinants of wanted and unwanted fertility in Latin America." Paper presented at the General Conference of the IUSSP, Salvador, Brazil, 18-24 August.

HEATON, T. B., FORSTE, R.;OTTERSTROM, S. M. Family transitions in Latin America: first intercourse, first union and first birth. Int. J. Popul. Geogr., 8: 1–15, 2002.

IBISOMI, L.; ODIMWEGU, C.; OTIENO, A., KIMANI, M. Degree of Preference Implementation and Fertility Changes in Developing Countries. In: The XXVth IUSSP Conference. Tours, France; 2005.

ITABORAI, N.R. Trabalho feminino e mudanças na família no Brasil (1984-1996). R. bras. Est. Pop., Campinas, v. 20, n. 2, p. 157-176, jul./dez. 2003.

Kohler, H.-P. and J. A. Ortega (2002). Tempo-adjusted period parity progression measures, fertility postponement and completed cohort fertility. Demographic Research [online available at http:// www.demographic-research.org] 6(6), 91–144.

KREIDER, A; SHAPIRO, D.; SINHA, M; VARNER, C. Socioeconomic progress and fertility transition in the developing world: evidence from the Demographic and Health Surveys. Anais do XXVI IUSSP International Population Conference. 2009.

Leone, T. and Hinde, A. (2002). Sterilization and union dynamics in Brazil. *Journal of Biosocial Science* 37: 459-469.

LEONE, T; HINDE, A. Fertility and union dissolution in Brazil: an example of multi-process modelling using the Demographic and Health Survey calendar data. Demographic Research. V. 17 - article 7, pp. 157-180, 2007.

Leone, Tiziana.;Hinde, Andrew. ·Sterilization and Union Instability in Brazil. Journal of Biosocial Science 08/2005; 37(4):459-69. DOI:10.1017/S0021932004006972 · 0.98 Impact Factor

Lesthaeghe, R. (2014). The second demographic transition: A concise overview of its development. Proceedings of the National Academy of Sciences, 111, 18112–18115.

Luis Rosero-Bixby. 1996. Nuptiality trends and fertility transition in Latin America. Oxford, Clarendon Press. 135-150

Marteleto, Letícia J.; Noonan. Mary C. (1998) Grandmothers as Childcare Providers in Brazil. Annual meetings of the Population Association of America, April 2-4, 1998, Chicago.

Martin, T. C.. (1995). Women's Education and Fertility: Results from 26 Demographic and Health Surveys. *Studies in Family Planning*, *26*(4), 187–202. http://doi.org/10.2307/2137845

MARTÍN, T. C.; JUÁREZ, F. The impact of women's education on fertility in Latin America: searching for explanations. International Family Planning Perspectives, v. 21, n. 2, p. 52-80, June 1995.

Martine, G. (1996) Brazil's fertility decline, 1965–95: a fresh look at key factors. Population and Development Review 22(1), 47–73.

Morgan, S. Philip, Antonio McDaniel, Andrew T. Miller, & Samuel H. Preston. (1993). Racial Differences in Household and Family Structure at the Turn of the Century. American Journal of Sociology, 98(4), 799-828.

Morgan, S. Philip. (1991). Late Nineteenth- and Early Twentieth-Century Childlessness. American Journal of Sociology, 97(3), 779-807.

Morgan, S. Philip. (2003). Is Low Fertility a Twenty-First-Century Demographic Crisis? Demography, 40(4), 589-603. PMC2849155. – PAA Presidential Address.

Ogland, Curtis P; . Xiaohe Xuet al. John P. Bartkowski, Emmanuelle G. Ogland. (2011)The Association of Religion and Virginity Status Among Brazilian Adolescents Journal of Adolescent Health , Volume 48 , Issue 6 , 651 – 653. Curtis P. Ogland, B.S.

Perpétuo, Ignez H. O. Wong, Laura Rodríguez. (2006) Towards a replacement rate: programs and policies which affected the fertility course in Brazil Papeles de POBLACIÓN No. 47 CIEAP/UAEM.

Potter JE, Schmertmann CP, Cavenaghi SM. Fertility and development: Evidence from Brazil. **Demography.** 2002;39:739–761.

POTTER, J. E.; SCHMERTMANN, C. P.; ASSUNCAO, R. M.;CAVENGHI, S. M. Mapping the timing, pace, and scale of the fertility transition in Brazil. Population and Development Review, 36, 283–307, 2010.

Ríos-Neto,E.; Guimarães, R Rangel de Meireles. The Educational Gradient of Low Fertility in Latin America.- XXVII International Population Conference, Busan, 2013

ROSERO-BIXBY, L; CASTRO-MARTIN, TERESA, MARTIN-GARCIA, TERESA. Is Latin America starting to retreat from early and universal childbearing? Demographic Research. Demographic Research. VOLUME 20 - ARTICLE 9 | PAGES 169-194

Smock, Pamela, and Fiona Rose Greenland. 2010. "Diversity in Pathways to Parenthood: Patterns, Implications, and Emerging Research Directions." Journal of Marriage and Family, 72(3): 576-593.

SOUZA, L. R. de; RIOS-NETO, E. L. G.; QUEIROZ, B. L. A relação entre parturição e trabalho feminino no Brasil. Revista Brasileira de Estudos de População, v. 28, n. 1, p. 57- 79, jun. 2011.

Testa, M. R., & Toulemon, L.. (2006). Family Formation in France: Individual Preferences and Subsequent Outcomes. *Vienna Yearbook of Population Research*, *4*, 41–75. Retrieved from http://www.jstor.org/stable/23025477

VERONA, A. P. A. Sexual initiation and religion in Brazil. Tese (Doutorado em Sociologia). University of Texas at Austin, 2010.

Verona, Ana Paula; Claudio Dias Jr., Dimitri Fazito, Paula Miranda-Ribeiro, First conjugal union and religion: Signs contrary to the Second Demographic Transition in Brazil?, *Demographic Research*, 2015, 33, 985

TABLES

Table 1: Univariate and Multivariate Poisson regressions of Children Ever Born, women age 40 and plus, 1986, 1996 and 2006.

		Incidence Rate Ratios					
		1986		1996		2006	
Models:		Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Wealth Index (continuous)		0.796***	0.890***	0.795***	0.879***	0.808***	0.875***
Work		0.806***	0.883***	0.873***	0.954**	0.825***	0.944***
BA_level		0.406***	0.615***	0.521***	0.726***	0.582***	0.810***
Marital status (ref:Single)	*Cohabiting*	32.6909***	24.582***	11.363***	9.384***	5.215***	4.563***
	Married	31.54476***	25.868***	9.998***	9.281***	4.651***	4.486***
	Separated/Divorced	26.51807***	23.150***	9.841***	8.688***	4.556***	4.289***
Constant for multivariate model			0.193***		0.458***		0.767**
Observations		647	647	2,547	2,529	3,743	3,726

Note: All multivariate models controlled by Race (except 1986), Region, Urbanicity, Religion and Church attendance (except 1986).
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Univariate and Multivariate Poissons of Desired Family Size, all women, 1986, 1996 and 2006.

	Incidence Rate Ratios					
	1986		1996		2006	
	Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Wealth Index (continuous)	0.960***	0.978***	0.984**	0.986**	0.968***	0.971***
Work	0.979	0.996	1.013	0.982	0.985	0.961***
BA_level	0.862***	0.934***	0.932***	0.978	0.963**	1.027
Marital status (ref:single)						
Cohabiting	1.152***	1.020	1.131***	1.003	1.189***	1.033*
Married	1.233***	1.077***	1.299***	1.100***	1.347***	1.111***
Separated/Divorced	1.049	0.925**	1.104***	0.938***	1.159***	0.968
Age	1.012***	1.010***	1.014***	1.012***	1.014***	1.013***
Constant for multivariate model		1.754***		1.293***		1.130**
Observations	5,818	5,818	12,492	12,399	15,348	15,287

Note: All multivariate models controlled by Race (except 1986), Region, Urbanicity, Religion and Church attendance (except 1986).

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Multinomial logit of Fertility Status, all women aged 30 and plus, 1986, 1996 and 2006. Reference category is Surplus.

	2006		1996		1986	
	Neutral	Deficit	Neutral	Deficit	Neutral	Deficit
Wealth Index (continuous)	0.291***	0.243***	0.273***	0.247***	0.355***	0.215***
Work	0.101*	0.102	-0.0187	0.0798	-0.0329	0.211*
BA_level	1.022***	1.410***	0.856***	0.994***	0.519***	1.074***
Marital status (ref:single)						
Cohabiting	-1.029***	-2.262***	-1.563***	-2.571***	-2.095***	-3.699***
Married	-0.488**	-1.863***	-1.050***	-2.701***	-1.840***	-3.682***
Separated/Divorced	-1.075***	-2.394***	-1.380***	-2.833***	-1.845***	-3.608***
Constant for multivariate mode	0.329	0.661*	0.131	1.170***	0.923	2.473***
Observations	7,991	7,991	6,004	6,004	2,341	2,341

Note: All multivariate models controlled by Race (except 1986), Region, Urbanicity, Religion and Church attendance (except 1986).

*** p<0.01, ** p<0.05, * p<0.1

Results are in log odds

Table 4: Logit regressions of Not wishing to have more children (reference=1) compared to people who wish to have it later (0), women who have CEB<DFS, women age 30 and plus.

	1986		1996		2006	
Models:	**Univariate**	**Multivariate**	**Univariate**	**Multivariate**	**Univariate**	**Multivariate**
Wealth Index (continuous)	1.196**	0.342***	1.097	0.105	1.057	0.0826
Work	0.626***	-0.350*	0.909	-0.0824	0.851	-0.127
BA_level	0.704*	-0.807***	0.762*	-0.369**	0.581***	-0.531***
Marital status						
cohabiting (ref: married)	1.162	0.12				
cohabiting (ref: single)			1.304	0.177	1.654***	0.326*
Married (ref. single)			1.916 ***	0.506**	2.272***	0.696***
Divorced (ref: single)			3.92***	1.334***	4.474***	1.408***
			0	-0.27	0	-0.197
Constant for multivariate model		2.046		0.121		-1.435
Observations	527	527	828	825	1467	1,455

Note: All multivariate models controlled by Race (except 1986), Region, Urbanicity, Religion and Church attendance (except 1986).
In 1986, women who were not married or cohabiting did not get asked the question about intention for additional births.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Results in log odds.

Table 5: Total count of children who were born in excess (if DFS-CEB <0, Surplus), who were not born (if DFS-CEB>0, Deficit) and born according to their mother's CFS (DFS-CEB=0, Neutral), all women, 1986, 1996 and 2006.

(available upon request)

Table 8: Desired Family Size by DHS year, age groups and selected covariates.

All women

Total	1986	1996	2006
40-49	3.44	2.88	*2.46*
30-39	3.00	*2.38*	2.15
20-29	*2.60*	2.09	1.90

Wealth Level 0	1986	1996	2006
40-49	3.54	3.24	*2.89*
30-39	3.45	*2.80*	2.52
20-29	*2.99*	2.30	2.10

Wealth Level 1	1986	1996	2006
40-49	3.84	3.04	*2.84*
30-39	3.44	*2.53*	2.35
20-29	*2.82*	2.10	1.88

Wealth Level 2	1986	1996	2006
40-49	3.34	2.76	*2.44*
30-39	2.85	*2.27*	2.01
20-29	*2.44*	2.02	1.88

Wealth Level 3	1986	1996	2006
40-49	3.38	2.87	*2.38*
30-39	2.87	*2.35*	2.08
20-29	*2.48*	2.09	1.86

Wealth Level 4	1986	1996	2006
40-49	3.33	2.80	*2.34*
30-39	2.76	*2.30*	2.20
20-29	*2.52*	2.08	1.93

Urban	1986	1996	2006
40-49	3.31	2.78	*2.37*
30-39	2.89	*2.32*	2.09
20-29	*2.50*	2.04	1.87

Rural	1986	1996	2006
40-49	3.84	3.34	*2.93*
30-39	3.36	*2.68*	2.47
20-29	*2.93*	2.32	2.04

Catholics	1986	1996	2006
40-49	3.47	2.89	*2.45*
30-39	3.02	*2.39*	2.13
20-29	*2.67*	2.09	1.94

Protestants	1986	1996	2006
40-49	3.97	2.96	*2.50*
30-39	3.00	*2.43*	2.15
20-29	*2.41*	2.14	1.94

No Religion	1986	1996	2006
40-49	2.28	2.29	*2.32*
30-39	2.70	*2.16*	1.91
20-29	*2.25*	1.86	1.61

Education 0	1986	1996	2006
40-49	3.62	3.08	*2.95*
30-39	3.34	*2.56*	2.53
20-29	*2.88*	2.26	2.19

Education 1	1986	1996	2006
40-49	3.53	2.85	*2.39*
30-39	2.88	*2.42*	2.16
20-29	*2.62*	2.07	1.87

Education 2	1986	1996	2006
40-49	3.30	2.64	*2.51*
30-39	2.80	*2.27*	2.04
20-29	*2.35*	2.03	1.84

Education 3	1986	1996	2006
40-49	2.89	2.71	*2.10*
30-39	2.55	*2.30*	1.99
20-29	*2.43*	2.03	1.85

Education 4	1986	1996	2006
40-49	2.56	2.55	*2.33*
30-39	2.65	*2.09*	2.23
20-29	*2.53*	2.14	1.98

North	1986	1996	2006
40-49	4.28	2.94	*2.77*
30-39	3.29	*2.62*	2.40
20-29	*2.56*	2.11	2.02

Northeast	1986	1996	2006
40-49	2.93	2.77	*2.54*
30-39	3.07	*2.37*	2.17
20-29	*2.75*	2.09	1.90

Southeast	1986	1996	2006
40-49	3.37	2.82	*2.31*
30-39	2.88	*2.24*	2.08
20-29	*2.48*	2.05	1.84

South	1986	1996	2006
40-49	4.06	2.94	*2.51*
30-39	3.11	*2.47*	2.11
20-29	*2.67*	2.07	1.94

Center-West	1986	1996	2006
40-49		3.39	*2.72*
30-39		*2.91*	2.26
20-29		2.27	2.05

White	1996	2006
40-49	2.85	*2.39*
30-39	*2.32*	2.17
20-29	2.12	1.88

Black	1996	2006
40-49	2.90	*2.51*
30-39	*2.43*	2.15
20-29	2.06	1.91

Race 3	1996	2006
40-49	2.88	*2.65*
30-39	*2.18*	1.91
20-29	2.33	1.86

Key: Decrease and Increase; Decreasing; Increasing

Note: No information for race was recorded for 1986. In that year, Center-West was included in Southeast.

Table 9: Measures of dispersion for Desired Family Size by DHS year, age groups, birth cohort and children ever born in 1986.

Desired family size (DFS)												
	1986				1996				2006			
(Age: 20-29)	Mean	Standard Deviation	CV	(Age: 30-39)	Mean	Standard Deviation	CV	(Age: 40-49)	Mean	Standard Deviation	CV
CEB				CEB				CEB			
0	2.49	1.29	0.52	**0**	1.79	1.13	0.63	**0**	1.80	1.70	0.95
				1	1.99	1.00	0.50	**1**	2.00	1.06	0.53
				2	2.32	1.25	0.54	**2**	2.48	1.39	0.56
				3	2.89	2.01	0.69	**3**	3.44	3.73	1.08
total (all parities)	**2.49**	**1.29**	**0.52**		**2.45**	**1.69**	**0.69**		**2.64**	**1.76**	**0.67**
1	2.32	1.14	0.49	**1**	1.81	1.16	0.64	**1**	1.95	1.84	0.94
				2	2.63	2.35	0.90	**2**	2.35	0.85	0.36
				3	2.43	1.22	0.50	**3**	2.82	1.47	0.52
total (all parities)	**2.32**	**1.14**	**0.49**		**1.97**	**1.44**	**0.73**		**2.70**	**2.18**	**0.81**
2	2.61	1.26	0.48	**2**	2.47	1.70	0.69	**2**	2.46	1.54	0.63
				3	2.78	2.01	0.72	**3**	3.13	1.83	0.58
total (all parities)	**2.61**	**1.26**	**0.48**		**2.29**	**1.34**	**0.59**		**2.67**	**1.67**	**0.62**

Note: CV=coefficient of variation